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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,792	09/16/2003	Won-Joon Choi	ATH-0133	3500
30547 7590 10/29/2007 BEVER HOFFMAN & HARMS, LLP 2099 GATEWAY PLACE SUITE 320 SAN JOSE, CA 95110			EXAMINER PERILLA, JASON M	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 10/29/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/664,792

Applicant(s)

CHOI ET AL.

Examiner

Jason M. Perilla

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-6 are pending in the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5, and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Logvinov et al (U.S. Pub. No. 2003/0231582 – previously cited; “Logvinov”) in view of Dollard (U.S. Pat. No. 6,934,340 – previously cited).

Regarding claim 1, Logvinov discloses a method of improving receiver performance by creating an improved channel estimate by carefully inserting pilot tones into sub-channels (§ 0016). Logvinov discloses the notoriously known fact that, in an OFDM communication system (§ 0003), pilot signals are utilized “in particular sub-channels” to determine channel estimation (§ 0011). Logvinov does not disclose generating a pilot mask in the receiver based solely on analysis at the receiver, wherein the pilot mask includes a set of flags, the set of flags associated with certain sub-channels, wherein each flag in the set of flags determines whether its associated sub-channel is usable for pilot tracking, wherein at least one flag indicates its associated sub-channel is not usable for pilot tracking, thereby allowing the receiver to avoid a bad pilot. However, Dollard teaches, in a strictly analogous channel improvement technique for OFDM (col. 5, lines 30-40), determining a sub-channel mask or “bitmap indicative of

which sub-carriers are usable and unusable" (col. 5, lines 45-55). Each "bit" in Dollard's "bitmap" reads upon the claimed "flag". That is, the on or off state of bits in Dollard's bitmap corresponds to a usable or unusable state of a respective sub-carrier in the OFDM transmission system. The first instance of Dollard's mask is generated based solely upon an analysis at the first communication device (col. 5, lines 40-45). Although Dollard discloses the generation of a mask or "bitmap" which is "negotiated" (col. 6, lines 5-15) between two transceivers, the initial version of the mask is, indeed, generated according to an analysis at a "first communication device" only (col. 5, lines 40-45). That is, the first instance of the mask is created based upon an analysis performed at the first communication device without any assistance from another device. Furthermore, as broadly as claimed, this mask is generated "for immediate use" in the receiver because it is immediately ready at the receiver side to determine a negotiated mask in conjunction with the transmitter. Finally, in a proposed combination of Dollard in view of Logvinov, the selection of certain sub-carriers which are usable or unusable according to Dollard's "bitmap" in the OFDM communication system of Logvinov would, as understood by one having ordinary skill in the art, apply to the position of pilot symbols in the OFDM transmissions because no pilots would be inserted into a sub-carrier that is specified as "off" in the bitmap. Therefore, Dollard's bitmap would indicate sub-channels which are not usable for pilot tracking, thereby allowing the receiver to avoid a bad pilot. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made that the OFDM communication system of Logvinov could be modified to apply a mask of usable and

unusable sub-channels as taught by Dollard because it would further aid in the perfection of the channel for communication.

Regarding claim 2, Logvinov in view of Dollard disclose the limitations of claim 1 as applied above. Further, Dollard discloses that if a spur or interference coincides with a sub-channel, then the pilot mask will not allow that sub-channel to be used (col. 7, lines 17-60, col. 8, lines 35-42).

Regarding claim 3, Logvinov in view of Dollard disclose the limitations of claim 1 as applied above. Further, Dollard discloses the remaining limitations of the claim as applied to claim 2 above.

Regarding claim 5, Logvinov in view of Dollard disclose the limitations of claim 1 as applied above. Further, as broadly as claimed and as understood by one having ordinary skill in the art, the combination of Logvinov in view of Dollard would perform equally well at any data rate.

Regarding claim 6, Logvinov in view of Dollard disclose the limitations of the claim as applied to claim 1 above.

4. Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Logvinov in view of Dollard, and in further view of Goldstein et al (U.S. Pub. No. 2004/0081076; "Goldstein").

Regarding claim 4, Logvinov in view of Dollard disclose the limitations of claim 1 as applied above. Further, Dollard discloses the use of the IEEE 802.11 standard (col. 1, lines 66-67, col. 2, lines 1-5, col. 7, lines 30-44). However, the IEEE 802.11 standard utilizes 52 sub-channels as evidenced by Goldstein (¶ 0005). Therefore, it would have


been obvious to one having ordinary skill in the art at the time which the invention was made that the OFDM communication system of Logvinov in view of Dollard would utilize 52 sub-carriers as specified by the IEEE 802.11 standard and disclosed by Goldstein.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jason Perilla
November 24, 2007

jmp


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER